Section of Odontology

President—LILIAN LINDSAY, L.D.S.Durham, L.D.S.Ed.

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Arterial Supply of the Mandible

By ALEXANDER MACGREGOR, M.A., M.D., M. and L.D.S. R.C.S.

IT is, of course, a common observation that necrosis of large fragments of bone following fracture of the mandible is an uncommon sequela save in the presence of gross comminution and sepsis.

The main arterial supply of the mandible is derived from the inferior dental artery on each side and, according to the older writers, there was little anastomosis across the mid-line of the mandible. The survival of fragments of bone following fracture was in consequence assumed to be entirely due to the arterial supply derived from the numerous muscular attachments to the bone.

Little work has been done to verify the assumption that there was no anastomosis of the two inferior dental arteries across the mid-line: but in 1935 Howkins published the result of his studies in the *Proceedings of the Royal Society of Medicine*. As a result of this work he formed the conclusion that in pigs, monkeys and humans there was little if any anastomosis past the mid-line of the mandible, though it was present in the lips and neighbouring area, probably from anastomosis of the mental and facial arteries.

An opportunity to test this view that no anastomosis of the two inferior dental arteries across the symphysis of the mandible existed, occurred when a patient who had had a fracture in the $\lfloor\overline{6}$ region died eight days after the injury. The mandible was removed post mortem, stripped of its muscular attachments and, with the aid of a cannula in each of the two inferior dental arteries, a differential arterial injection was performed on each side. Using the ordinary technique, after tying in the cannulæ the blood-vessels were well washed out with normal saline. The mandible being held under warm water carmine gelatin in a warm and liquid state was then injected through the cannula into the inferior dental artery of the intact side of the mandible, and trypan blue gelatin was injected into the fractured side. The gelatin was allowed to set, and the mandible split and cut in sagittal section.

It was at once apparent that the trypan blue gelatin extended to the site of fracture in the blood-vessels of the posterior fragment of the left side, and carmine gelatin was present in those of the right side and left side as far back as the site of fracture. It was, therefore, clear that an anastomosis across the mid-line must have been present to allow the carmine gelatin to travel backwards to the fracture area. (A colour photograph of the mandible was taken and this was shown at the Meeting.)

It is not suggested that the muscular attachments of the mandible do not play a most important part in the survival of mandibular fragments following fracture. It is clear that following a bilateral fracture of the mandible with displacement such that both inferior dental arteries must have been severed, the survival of the anterior fragment could not depend upon the inferior dental arteries. It is, however, suggested that this anastomosis of the inferior dental arteries across the mid-line which is present—at any rate eight days after injury—may assist in the survival of parts of the bone, and that the older view that anastomosis across the symphysis does not occur appears, therefore, to be incorrect.

REFERENCE

HOWKINS, C. H. (1935) *Proc. R. Soc. Med.* **29,** 506.